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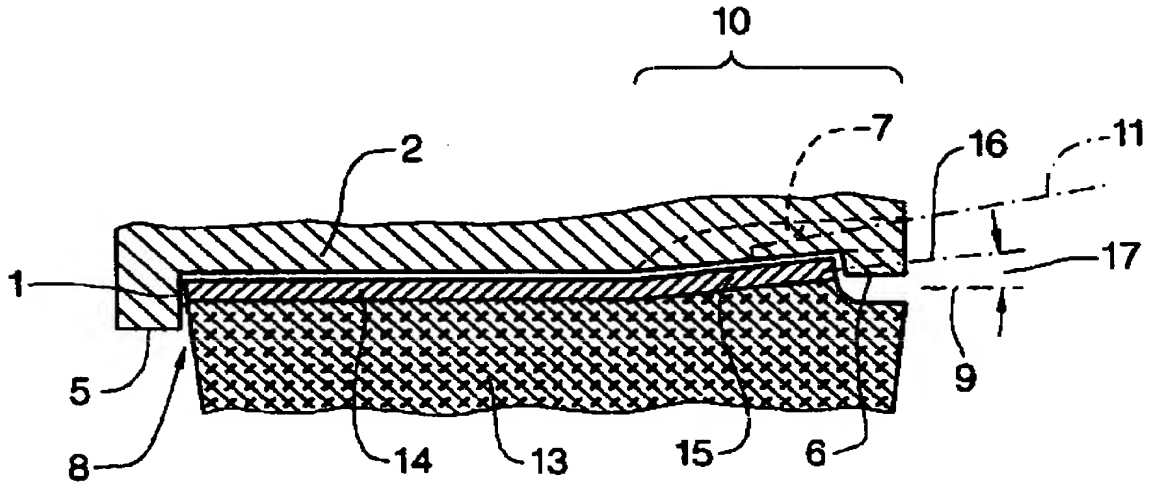
(54) **ELEMENT DE CHENILLE POUR VEHICULES**
(54) **CRAWLER TRACK LINK MEMBER**



(57) In the case of highly mobile vehicles overloading of the travelling pads (3) of crawler tracks frequently gives rise to incipient cracks in the base plate (14), which generally start from the bottom of the incision of the tongue. A long service life for the travelling pad (3) with base plate (14) is achieved by the base plate (14) being incision-free in the retaining region (10).

Abstract

In the case of highly mobile vehicles overloading of the travelling pads (3) of crawler tracks frequently gives rise to incipient cracks in the base plate (14), which generally start from the bottom of the incision of the tongue. A long service life for the travelling pad (3) with base plate (14) is achieved by the base plate (14) being incision-free in the retaining region (10).

(Figure 2)

The invention relates to a crawler track link member as set forth in the classifying portion of claim 1.

German published specification (DE-AS) No 16 05 509 discloses a caterpillar or crawler track link member having a plate-shaped slide-on portion in the form of a travelling pad. A base plate which is connected to the travelling pad has a stamped-out tongue which, when the travelling pad is pushed on, slides into the crawler track link member over an abutment projection until - after the travelling pad moves into a condition of abutment - the travelling pad drops in retaining relationship on the crawler track link member behind a projection.

That fixing principle is also known in relation to travelling pads in accordance with DE 33 35 937 C2 and DE 195 44 458 A1.

When the track-laying vehicle is moving along, travelling pads of that kind are subjected to stresses due to high contact pressures, thrust loadings and high dynamic shock loadings. Particularly in the case of highly mobile vehicles, overloading frequently causes the base plate to suffer from incipient cracks or fractures which generally start from the bottom of the incision of the tongue retaining portion. If the incipient cracks or fractures are not noticed sufficiently early or if travelling pads with base plates which have suffered from incipient cracking or fracturing are not removed by virtue of the rubber wear, then the base plate suffers from complete rupture. Travelling pads with completely fractured base plates represent a potential danger as they can fly off the track when the vehicle is moving along.

Various endeavours have been undertaken to avoid or reduce the risk of incipient crack or fracture. For that purpose for example the notch shape factor was brought into effect by providing a larger radius in the incision region of the tongue, and fixing the stamping direction in the cutting operation to avoid stress peaks on the flexural tensile side. An increase in the thickness of the initial sheet metal was also tried. It was not possible for those measures to provide a definitive solution to the cracking problem.

The object of the present invention is so to design the slide-on portion that incipient cracks and ruptures on base plates of slide-on portions for crawler tracks do not occur.

The invention attains that object in accordance with the characterising features of claim 1. Advantageous developments of the invention are set forth in the appendant claims.

The way in which that object is attained provides that the securing tongue of the base plate is no longer cut out therein and pushed out, but rather the base plate is provided with an impression portion in the region of the tongue which was earlier pushed out therefrom, which implements the function of the tongue retaining portion.

The base plate is now no longer weakened by the incisions. There is no longer any notch shape factor which had considerably increased the loading on the component. There is no need for an increase in the thickness of the base plate. That means that the weight of the sheet metal component is also not increased. The slide-on portion can be fitted and removed in a simple manner by the existing on-board tools.

Tests which have been carried out have shown that no incipient cracks and ruptures occurred on the base plates, over the useful life of the slide-on portion. The elimination of the incisions in the base plate affords a reduction in cost.

Embodiments of the invention are illustrated in the drawing in which:

Figures 1 and 2 are views in cross-section of travelling pads in a crawler track link member,

Figure 3 is a perspective view of a travelling pad in a crawler track link member,

Figure 4 is a view in section taken along line IV-IV in Figure 3,

Figure 5 is a view in cross-section of a further travelling pad in a crawler track link member,

Figure 6 is a view in section taken along line VI-VI in Figure 5,

Figure 7 shows a base plate of the travelling pad illustrated in Figure 5,

Figure 8 shows a portion of a crawler track with a travelling pad,

Figure 9 shows a sectional view of part of a travelling pad as shown in Figure 8,

Figure 10 shows a base plate of the travelling pad shown in Figures 8 and 9, and

Figure 11 is a view in cross-section taken along line XI-XI in Figure 10.

Referring to Figure 1, pushed into guide grooves 1 (which are not further shown) in a tubular body 2 is a travelling pad 3 with a base plate 4.

The base plate 4 is disposed in a retained or latched condition between two abutments 5, 6, see the retaining region 10. When the travelling pad 3 with the base plate 4 is pushed into the guide grooves 1 the base plate 4 slides over the abutment 6. When that happens, the base plate 4 is elastically deformed. When the travelling pad 3 is worn the base plate 4 is to be lifted over the abutment 6 by way of an opening indicated in broken line at 7, by means of a tool 11 (not shown), and is to be levered out by way of a tool (also not shown) which is to be inserted as indicated by the arrow 8. The base plate 4 is disposed in a main plane 9. It is incision-free, that is to say it is in the form of a tongue-free base plate 4.

Referring to Figure 2, as a departure from Figure 1 a base plate 14 is provided with a tongue 15 formed by non-cutting shaping. The main plane 9 and the tongue plane 16 form an angle 17. That results in frictional contact when the travelling pad 13 is pushed in or out of the tubular body 2, only between the tongue 15 and the abutment 6. The shaping zones in the retaining region 10 which result in the formation of the tongue 15 are described with reference to Figure 7.

Looking at Figures 3 and 4, in the case of a travelling pad 23 - similarly to Figures 2 and 7 - a base plate 24 with a tongue 25 which is formed therefrom by non-cutting shaping is provided in the retaining region 10. The base plate 24 extends in terms of surface area in regard to the major part thereof over the travelling pad 23. An elastomer layer 26 is disposed between a wearable steel body 27 which engages into the guide grooves 1 in a tubular body 22 shown in dash-dotted line. Similarly to the abutments 5, 6 shown in Figures 1 and 2, the base plate 24 is also disposed between abutments 28 and 29. An opening for lifting

the tongue 25 out of the tubular body 22 is identified by reference numeral 30.

As shown in Figures 5 to 7, a travelling pad 33 which is fixed in a tubular body 32 has a base plate 34 corresponding to Figures 2 and 4. The base plate 34 has two shaped or deformation zones 36 in the retaining region 10. Those shaped zones 36 provide for the formation of a tongue 35 corresponding to the angle 17 with respect to the main plane 9, see Figure 2. The base plate 34 is the carrier of the travelling pad 33 and at the same time it serves to make a positively locking connection to the tubular body 32 by engagement into the guide grooves 31 of the tubular body 32. An opening 40 serves for disengagement of the tongue 35 at the abutment 39.

In the case of a caterpillar or crawler track 50 as shown in Figure 8, tubular bodies 51 with guide teeth 52 are hingedly connected together by way of rubber-mounted pins 53 arranged in the tubular bodies 51, and connectors 54 which are fixed on the pins 53.

Each tubular body 51 has guide grooves 55 and abutments 56, 57 for fixing a travelling pad 63. The abutment at the insertion side is denoted by reference numeral 56 and the abutment at the rear side is denoted by reference numeral 57.

As shown in Figure 9, an intermediate plate 64 with guide bars 65 for the guide grooves 55 and a base plate 74 with a tongue 75 are joined to the travelling pad 63 by vulcanisation. The tongue 75 has rubber disposed therebeneath in the retaining region 10.

As shown in Figure 8, the tongue 75 of the base plate 74 has a double corrugation shape. That is afforded by the three shaped zones 76 and 77 shown in Figure 10.

In addition the base plate 74 has an end abutment 78. That corresponds to a rear wall 79 with the abutment 57 of the tubular body 51.

The abutment 56 of the tubular body 51 is provided with a central recess 80 which corresponds to an oppositely disposed recess 81 of the travelling pad 63.

Finally the base plate 74 has stiffening beads or corrugations 81 which are disposed in the direction of travel 80 of the crawler track 50, see Figure 10.

CLAIMS

1. A crawler track link member (2) with guide grooves (1) and a retaining means (5, 6) for slide-on portions such as travelling pads (3), studs, snow or mud grippers or buoyancy aids,

with a resilient base plate (4)

which is engaged at an abutment (6) with associated opening (7) in a tubular body (2),

the slide-on portion (3) is disposed in guide grooves (1) in the tubular body,

the base plate (4) slides over the projection (6) upon being pushed in and out, and upon being pushed out the base plate (4) can be lifted over the projection (6) by virtue of a lever (11) which can be fitted into the opening (7),

characterised in that the base plate (4) is of an incision-free nature in the retaining region (10).

2. A crawler track link member according to claim 1 characterised in that the base plate (4) is disposed in the retaining region (10) in the main plane (9) of the base plate (4).

3. A crawler track link member according to claim 1 characterised in that the base plate (14) forms in the retaining region (10) an angle (17) with the main plane (9).

4. A crawler track link member according to claim 3 characterised in that in the retaining region (10) the base plate (14) forms the angle by non-cutting shaping as by impressing.

5. A crawler track link member according to claim 1 characterised in that the base plate (74) which is spaced in a travelling pad from an intermediate plate (64) is of a tongue-free configuration, and that the intermediate plate engages with guide bars (65) into the guide grooves (1) in the tubular body (51).

6. A crawler track link member according to claim 1 characterised in that the tongue (15) has an inclined run-on portion (angle 17) in the sliding direction in relation to the abutment (6) which can be bridged over, for the tongue (15).

7. A crawler track link member according to claim 1 characterised in that in the region of the abutment (6) the base plate (4) has a continuous, non-interrupted end face.

8. A crawler track link member according to claim 6 characterised in that the base plate (74) has a doubled curvature which is produced by shaped zones (76, 77), as an abutment.

Fig.1

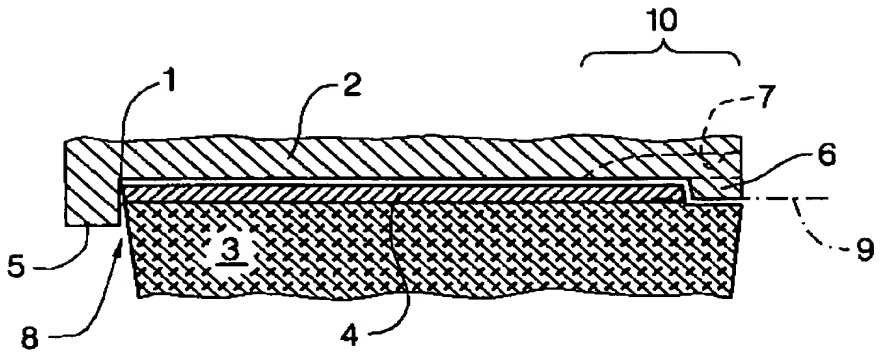


Fig.2

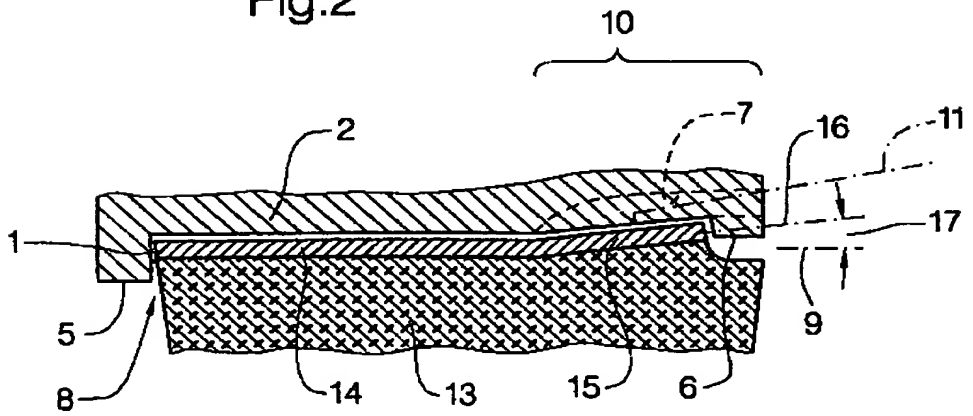


Fig.3

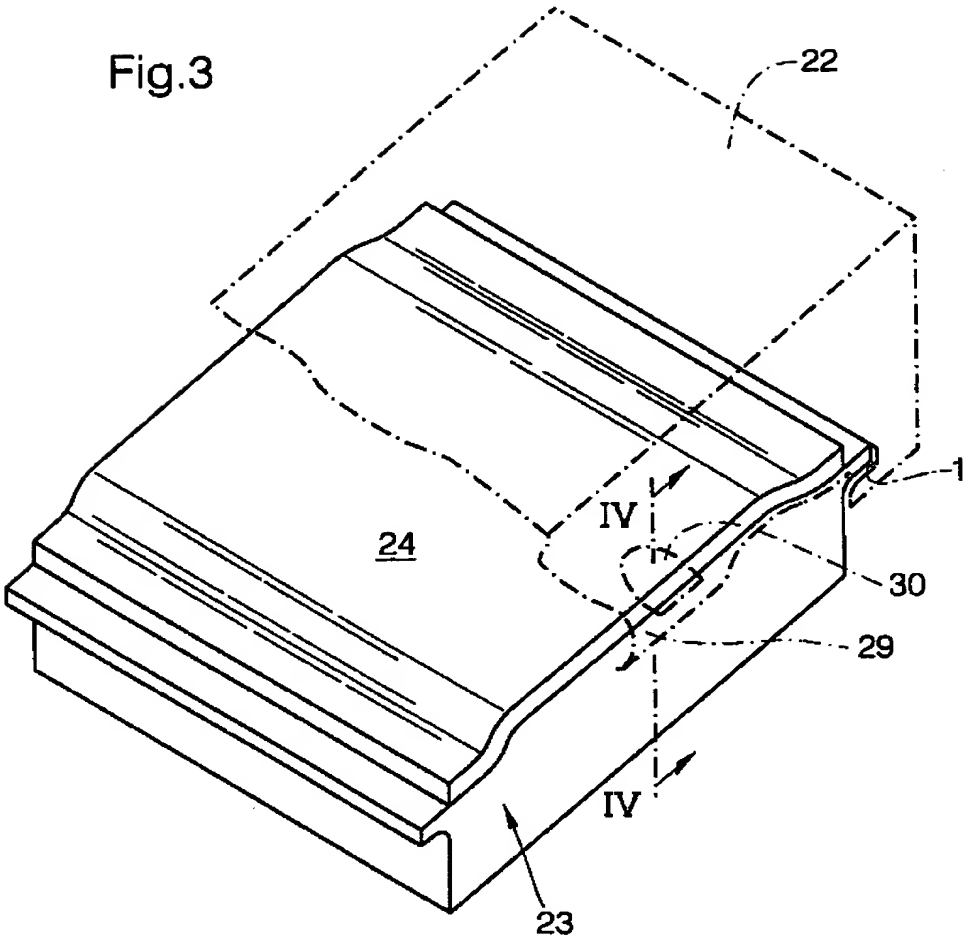


Fig.4

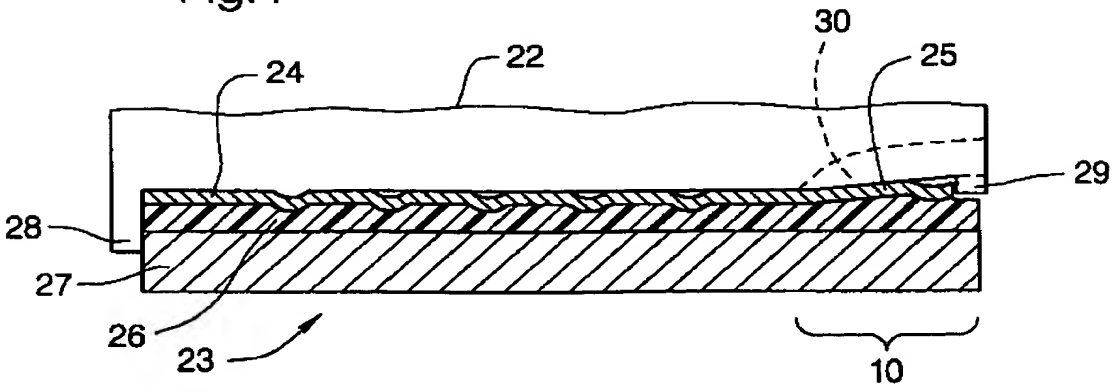


Fig.5

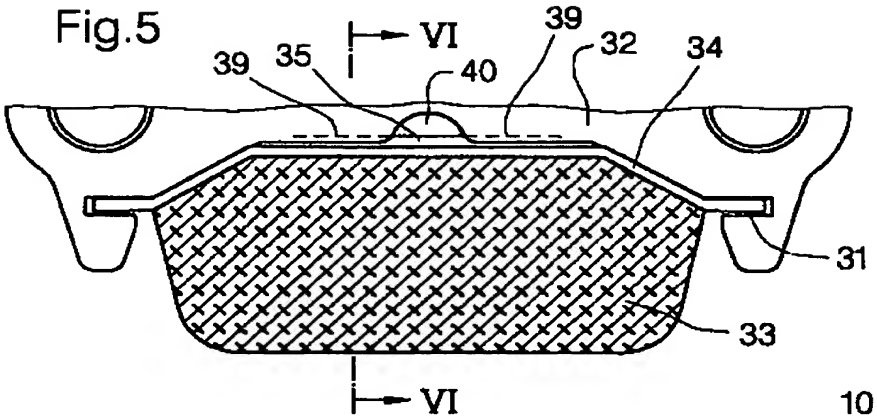


Fig.6

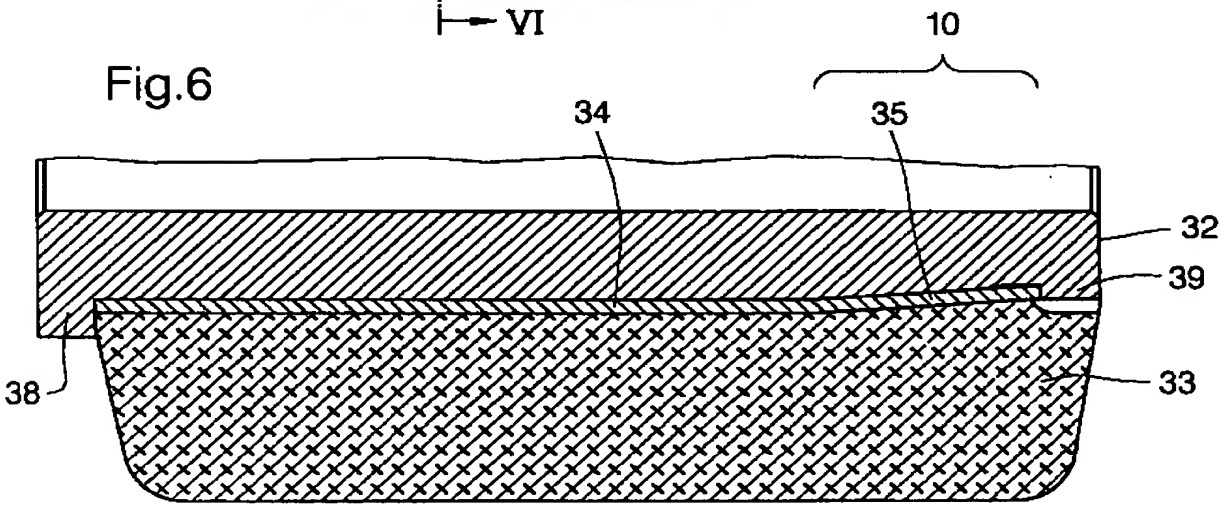


Fig.7

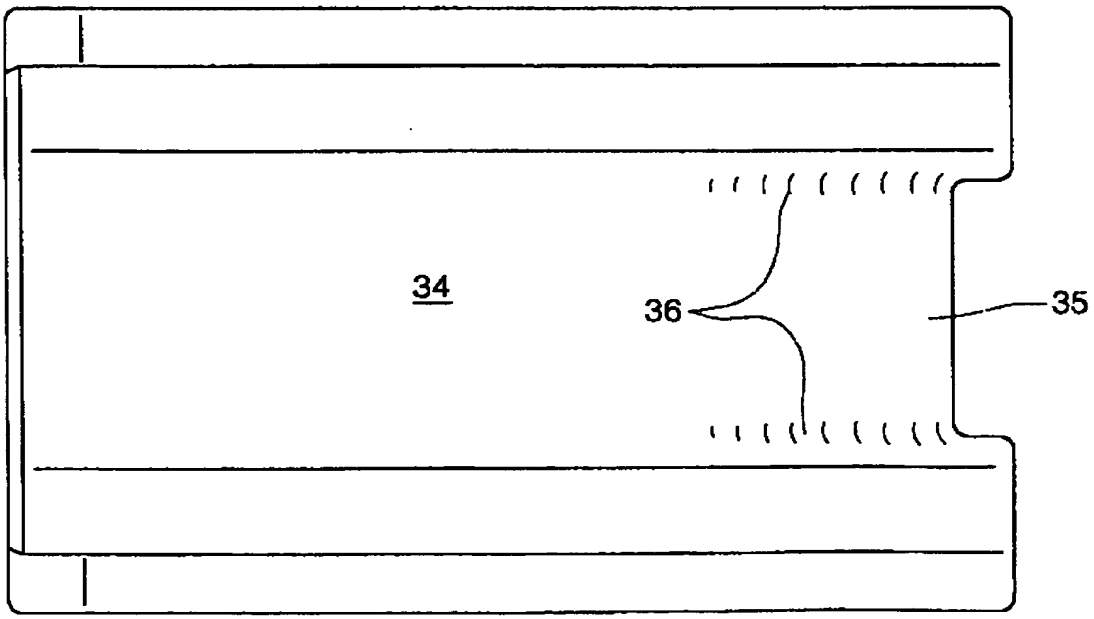


Fig.8

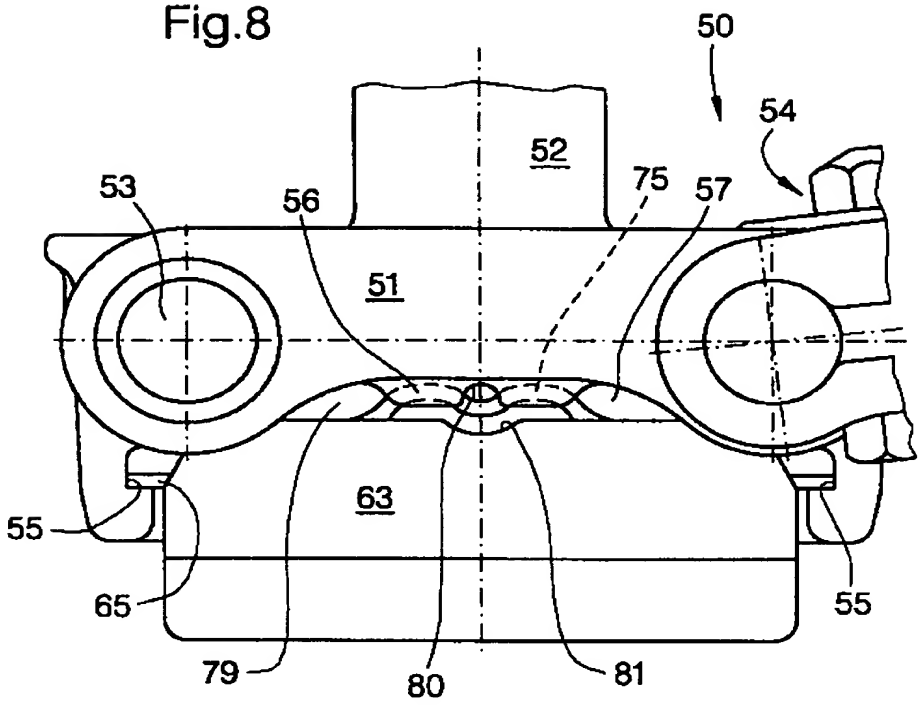


Fig.9

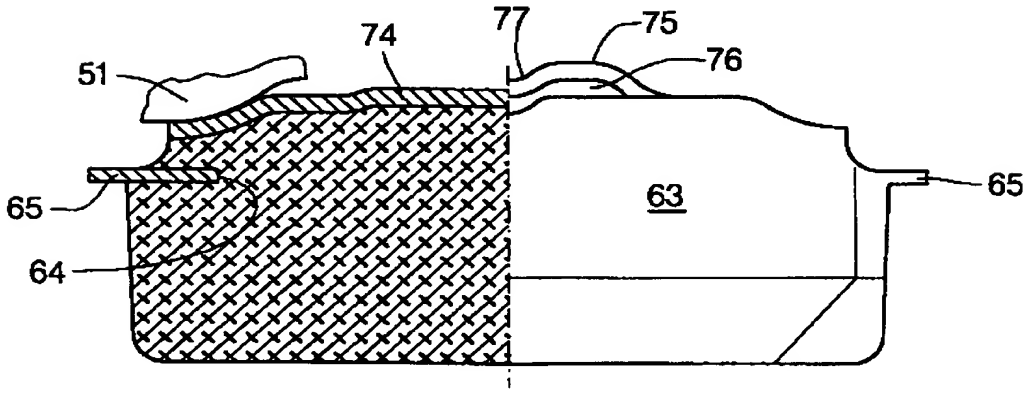


Fig.11

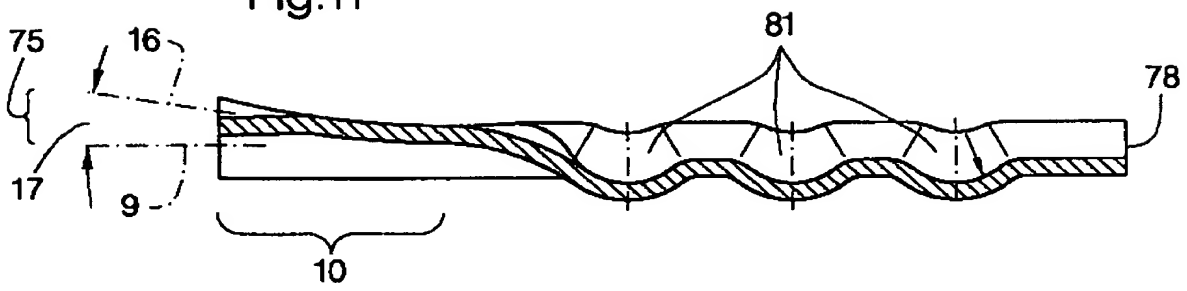


Fig.10